



In 2001, BEM Systems, Inc. performed an evaluation of the Georemediation™ technology for use in decontaminating dredged sediments from NY/NJ Harbor. Georemediation™ is a proprietary process developed by the Adelph Group of Ithaca, NY that accelerates natural attenuation of contaminants through the addition of a reagent containing fly ash, blast furnace slag, cement, meal salts, oxidants, clay pillaring agents and dispersants. The reagent accelerates oxidation reactions on newly formed and highly reactive surfaces to reduce organic contamination. The inorganic contaminants are immobilized through pozzolanic reactions and incorporation into newly formed and insoluble crystalline structures, thereby minimizing their long-term leaching. Decontaminated sediment is then used as structural or non-structural fill in remediation and construction applications. BEM evaluated the technology in the laboratory for use on NY/NJ Harbor sediments under a variety of dosing and curing regimes designed to mimic field conditions.



The results of the pilot tests were inconclusive at best. Although reductions in some organic constituents were observed for some mix scenarios, some high molecular weight PAH compounds were actually observed to increase slightly. Reduction in dioxin/furan concentrations and other large molecular weight contaminants was highly erratic and unpredictable. BEM indicated that further reduction might be achievable through increased depth during curing as well as increased curing time, however this option is

impractical as reductions must be measurable at the time of placement. In any event, the goal of reaching NJ Residential Direct Contact Soil Cleanup Criteria (RDCSCC) was not achieved. Little if any reduction in metal leaching potential was observed. In fact, the amount of metal observed increased over the course of multiple extractions, indicating that buffering required to immobilize metals was lost over time. Lastly, and perhaps most discouraging was the observation of various pesticides in leachate at concentrations above the NJDEP criteria for groundwater impacts. This observation limits the use of the beneficial use products to those applications that have leachate collections



systems, similar to conventional dredged material amendment technology. It is likely that any material treated with this technology would result in the user to purchase placement at a secured placement site, with the concomitant costs rather than benefits.

The geotechnical evaluation of the beneficial use product further reduced the applicability of this technology. Freeze thaw susceptibility tests indicated that the product could not be used efficiently in transportation projects. While the permeability of the final product was not low enough to achieve landfill liner or cap performance, it was too low to be used effectively as interim cover. These observations are not necessarily a reflection of the Georemediation™ technology, but rather a reflection of the difficulty in using harbor sediments in engineering applications. Mixing the product with other aggregates, or amending with other materials might improve the performance of the product, but would dramatically impact the efficiency of the process as well as the economic model of the treatment system.



Based on these rather disappointing results, OMR has decided not to perform demonstration level tests on this technology.